

ABSTRACT

EFFECT OF INCREASED LEVEL OF TRIGLYCERIDE WITH *LOW DENSITY LIPOPROTEIN CHOLESTEROL* (LDL-C) MEASUREMENT USING FRIEDEWALD FORMULA AND HOPKINS FORMULA WITH *DIRECT HOMOGENOUS* METHOD AS REFERRAL METHOD

Dislipidemia is a main risk factor of cardiovascular disease (CVD). It characterized by decreased of HDL-C, increased of LDL-C and triglyceride (TG). It leads to atherosclerosis and blocked blood flow. LDL-C as the main parameter of dislipidemia measured by direct method and calculation method like Friedewald Formula or Hopkins Formula using total cholesterol, HDL-C and triglyceride. The purpose of this research is to know the effect of increased triglyceride to LDL-C calculation using Friedewald formula and Hopkins formula and compare it to direct homogenous method as referral method.

This research is a analitic-comparation research which finds the correlation of LDL-C calculation using Friedewald formula and Hopkins formula on three groups of triglyceride. Lipid profiles data obtained from medical records in dr. Soetomo Hospital from May 23rd – June 4th. Those data grouped into three groups of triglyceride on <200 mg/dL, 200-400 mg/dL, >400 mg/dL. The number of patient who met the inclusion criteria is 494 patient consist of 266 woman and 228 man, mostly in range of 46-65 year old. 375 samples grouped into <200 mg/dL triglyceride. 94 samples grouped into 200-400 mg/dL, and 25 samples grouped into >400 mg/dL. Data analysed using Spearman correlation test and Wilcoxon Signed Ranks Test because data distribution is uneven.

The results on Spearman analysis shows that the highest correlation of both calculation method to direct method found on <200 mg/dL triglyceride level ($r=0,972$ and $r=0,974$). The correlation coefficient decrease on 200-400 mg/dL triglyceride level but it still show a good correlation ($r=0,944$ and $r=0,938$). The >400 mg/dL triglyceride level has a worst coefficient correlation on both calculation method ($r=0,780$ and $r=0,788$). Wilcoxon signed ranks test analysis shows significant correlation on both calculation method in <200mg/dL triglyceride. But Hopkins formula shows better correlation compared to Friedwald formula on 200-400 mg/dL level and >400mg/dL level.

This data analysis proved that Hopkins formula has better correlation on LDL-C calculation compared to Friedewald formula and both calculation method is not recommended to be used on >400 mg/dL triglyceride levels because it has small accuration. Lipid profile analysis on patient with high triglyceride must be checked using direct method for better accuration.

Keywords : dislipidemia, LDL-C, friedewald formula, hopkins formula, direct homogenous method.